

No. 2.—*Some West African Amphibians.*

BY THOMAS BARBOUR.

THANKS to the kindness of Dr. A. G. Ruthven, the Curator of the Museum of the University of Michigan, I have been able to study a series of amphibians collected in the Cameroons by the Rev. George Schwab, who has also recently sent a fine collection direct to this Museum. In connection with this material I have worked over some specimens in the Museum of Comparative Zoölogy from other sources. Since the wonderful amphibian fauna of this region is represented in American museums by so little recently collected material, this list with notes and figures of some of the less known forms will be of interest.

By the generosity of Dr. Ruthven the Museum of Comparative Zoölogy retains the types and a series of duplicates of the species represented in their collection.

Our knowledge of the amphibian fauna of Cameroons has been brought to date most completely, with critical notes and keys for the identification of the genera and species by Fritz Nieden (Mitteil. Zool. Museum, Berlin, 1908, 3, p. 489–518).

All of the Schwab collection was made at Efulen, Kribi, Cameroons, during 1907–10.

The Barbour collection mentioned in these pages was obtained from various sources, and is now a part of the collection of the Museum of Comparative Zoölogy.

RANA CRASSIPES Buchholz. & Peters.

Four specimens from Efulen, Kribi, Cameroons, Schwab collection.

One of the specimens shows an interesting malformation of the hind foot. Three toes are missing, the second and fourth only being present. The web is almost normal in extent and shape, but thickened and folded back from the inner margin, where it has partially fused on itself. The inner edge formed by the fold is somewhat cornified, and the foot is apparently almost as useful as the normal one.

RANA LONGIROSTRIS Peters.

A series of ten typical examples. Schwab collection, and one with shorter snout from the same locality in the Barbour collection.

RANA MASCARENIENSIS Dumeril & Bibron.

One in the Schwab collection.

RANA ALBOLABRIS Hallowell.

One in the Schwab collection.

RANA ZENKERI Nieden.

Plate 1.

Nineteen half grown and adult specimens from the Schwab collection show some interesting variations from Nieden's description. In the largest examples the snout is considerably longer than the diameter of the orbit, and the first and second fingers may be of the same size, or either one a little longer than the other. In all other respects these agree perfectly with the original description. Three of the examples measure from 240 to 260 mm. from nose to tip of outstretched fourth toe. Nieden's length measure taken in the same way was 160 mm.

SCOTOLEPS GABONICUS Boulenger.

A single example from Akok, Cameroons, in the Barbour collection, has the dorsal surface of the body quite smooth, in sharp contradistinction to the condition shown in Boulenger's figure of the type (P. Z. S. Lond., 1900, pl. 18, fig. 1).

GAMPSOSTEONYX BATESII Boulenger.

An example in the Barbour collection from Efulen, Kribi, Cameroons as well as one in the Schwab collection from the same locality. I had

about decided to consider this second specimen as the type of a new species. Lack of sufficient material, however, makes this doubtful. The specimen in the Schwab collection differs in having very large eyes, larger than shown in Boulenger's figure. (P. Z. S. Lond., 1900, pl. 29, fig. b.) The interorbital space is narrow, less than the width of an eyelid. The back is covered with very fine granules in regular lines instead of being "smooth and shiny." The profile is less slanting than in *G. batesii*, so that the muzzle is thick and heavy.

ASTYLOSTERNUS DIADEMATUS Werner.

Nieden has noted the identity of *Astylosternus* Werner with *Trichobatrachus* Boulenger. The seven hairy frogs before me force the conclusion that *T. robustus* Boulenger is a synonym of Werner's *A. diadematus*. The amount of emargination of the tongue, the size and position of the vomerine teeth groups, and the extent of the web between the toes shows such variation as to agree with the descriptions of both these species. Three of the seven specimens were procured some time ago by exchange for the Museum of Comparative Zoölogy; the other four came with the Schwab collection. The University of Michigan received thirteen examples, all from Efulen, Kribi, Cameroons.

DILOBATES PLATYCEPHALUS Boulenger.

A single example in the Schwab collection adds this species to the fauna of Cameroons. Its occurrence is not, of course, unexpected, as most of the species originally described from Gaboon have long ere this appeared in collections from Cameroons.

NYCTIBATES LAEVIS, sp. nov.

Plate 2, Fig. 1.

Type, M. C. Z. 2629, a single example from Efulen, Kribi, Cameroons, taken by the Rev. George Schwab.

Similar in general habit to *N. corrugatus* Boulenger (Ann. Mag. N. H., ser. 7, 1904, 13, p. 261-2). It differs in smaller tympanum, longer hind limb, large digital dilatations, smooth skin on back, and absence of the fine folds on the back converging posteriorly.

Description. Vomerine teeth in two small rounded groups between and very slightly posterior to the choanae. Head large, as long as broad; snout slightly longer than the orbit, with rounded profile; canthus rostralis not especially well developed; loreal region very slightly concave; nostril much nearer tip of snout than eye; eye large and prominent; interorbital space broader than upper eyelid; tympanum not one half the diameter of the eye. Limbs slender; tips of fingers and toes conspicuously dilated into discs; first finger a little shorter than second; toes about one third webbed; subarticular tubercles strong; a conspicuous inner metatarsal tubercle. The tibiotarsal articulation reaches the tip of the snout. Upper parts smooth, lower parts strongly granular. Uniform slate color above, dirty white below. Very faint darker cross bars on the limbs.

NYCTIBATES CORRUGATUS Boulenger.

A fine adult in the Schwab collection. This example differs considerably from the original description. The dorsal asperities are abundantly developed but scattered quite irregularly. They show no tendency to form chevron-like series. There is no triangular dark marking with light colored margin situated between the eyes. The lips are not wholly white but are marked with dusky broad, vertical bars. The inner side of the leg is not black but rather dusky brown with very many white spots. The specimen is unusually well preserved and as it was among the lot collected in 1910, I do not suppose that it has faded very much, if any.

CHIROMANTIS RUFESCENS Günther.

Two examples in the Schwab collection.

PHRYNOBATRACHUS PLICATUS Günther.

Two specimens from Bitye, on the Ja River, Cameroons, Barbour collection, and two from Efulen, Schwab collection.

PETROPEDATES NEWTONII Bocage.

A single adult male, with prominent tympanic stalks. Another male with less prominent stalks, and a female, from the Schwab collection.

PETROPEDATES JOHNSTONI (Boulenger).

The Barbour collection has a specimen from Akok, near Kribi, Cameroons.

LEPTODACTYLODON OVATUS Anderson.

Plate 2, Fig. 2.

The genus and species is figured for the first time from one of the two examples in the Schwab collection.

ARTHROLEPTIS VARIABILIS Matschie.

Two specimens from Kribi, Barbour collection.

ARTHROLEPTIS INGUINALIS Boulenger.

An example from Efulen, Barbour collection, and two in the Schwab collection.

DIMORPHOGNATHUS AFRICANUS (Boulenger).

A specimen each in the Barbour collection, and in the Schwab collection. They are both from Kribi.

RAPPIA OCELLATA (Günther).

One from Bitye, Ja River, Cameroons, Barbour collection.

RAPPIA PICTURATA Peters.

A single example from Anda, Lake Azingo, Gaboon, Barbour collection.

RAPPIA PUSILLA Cope.

One from Efulen, Cameroons, Barbour collection, and one in the Schwab collection.

RAPPIA MARMORATA (Rapp.).

One from Anda, Lake Azingo, Gaboon, Barbour collection.

RAPPIA STEINDACHNERI Bocage.

Two from Bitye, Cameroons, Barbour collection, and four in the Schwab collection also.

MEGALIXALUS FORNASINII Bianco.

Several specimens in the Barbour collection from Lake Asebbe, Gaboon, as well as two in the Schwab collection.

MEGALIXALUS VITTIGER (Peters).

A specimen from Bitye, Ja River, Cameroons, in Barbour collection.

HYLAMBATES AUBRYI Dumeril.

A specimen from Efulen Cameroons, Barbour collection.

HYLAMBATES RUFUS Reichenow.

Numerous specimens from Kribi in both the collections. The "varieties" *boulengeri*, *notata*, *modesta*, and *ventrimaculata* in no wise represent distinguishable races in that they all occur in the same area. They are simply individual variations.

HYLAMBATES OCELLATUS Mocquard.

One from Ja River, Cameroons, in the Barbour collection, and five in the Schwab series.

HYLAMBATES CUBITOALBUS Boulenger.

One from five miles inland from Kribi, Cameroons, Barbour collection.

HYLAMBATES CALCARATUS Boulenger.

One from five miles inland from Kribi, Cameroons, Barbour collection.

HYLAMBATES MILLSONII Boulenger.

One from the Ja River, Cameroons, Barbour collection.

HYLAMBATES BREVIROSTRIS Werner.

One from five miles inland from Kribi, Cameroons, Barbour collection, and two from the Schwab collection.

CARDIOGLOSSA GRACILIS Boulenger.

A specimen in the Barbour collection from the Ja River district, Cameroons.

PIRYNOMANTIS BIFASCIATUS (Smith).

Two specimens in the Barbour collection from Angola.

NECTOPHYNE AFRA Buchholz & Peters.

A single specimen in the Barbour collection from Bitye on the Ja River, Cameroons.

BUFO REGULARIS Renso.

There are two young specimens in the Cameroons collection made by Schwab. There were also examples in the Museum from Cameroons and Gaboon in West Africa, and in the Barbour collection from Angola.

BUFO LATIFRONS Boulenger.

A fine series of all ages in the Schwab collection.

BUFO TUBEROSUS Günther.

Four adult examples in the Schwab collection.

BUFO SUPERCILIARIS Boulenger.

An enormous example in the Barbour collection from the Ja River, Cameroons.

BUFO FUNEREUS Boulenger.

Three examples in the Schwab collection, and another in Barbour collection.

HYMENOCIRUS BOETTGERI Tornier.

Three specimens from the Ja River in the Barbour collection.